

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



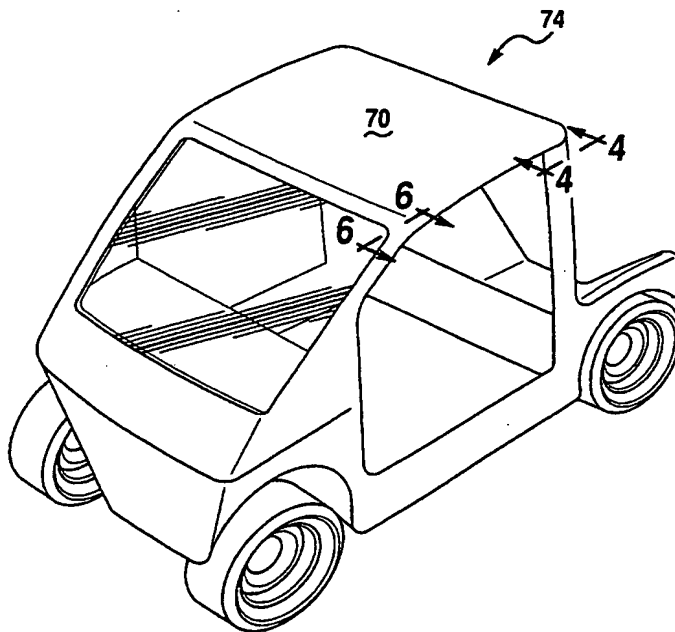
(43) International Publication Date
1 November 2001 (01.11.2001)

PCT

(10) International Publication Number
WO 01/81155 A2

- (51) International Patent Classification⁷: **B62D 23/00,** (81) Designated States (*national*): AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW.
- (21) International Application Number: PCT/US01/12875
- (22) International Filing Date: 20 April 2001 (20.04.2001)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 09/557,061 21 April 2000 (21.04.2000) US
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- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— without international search report and to be republished upon receipt of that report
- (74) Agent: CHUPA, John, G.; 31313 Northwestern Highway, Suite 205, Farmington Hills, MI 48334 (US).
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A MEMBER AND A METHOD FOR USING THE MEMBER TO SELECTIVELY CREATE AN ITEM



(57) Abstract: A member 10 which may be used to create a frame assembly 50. The member includes substantially identical portions 12, 14 which include substantially identical and substantially linearly coextensive channels 18, 20, effective to allow the member 10 to securely receive a plurality of members 24, 26, and 30 and to cooperate with these and other members 24, 26, 30, and 10 to form frame assembly 50.

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Description

A Member and a Method for Using the Member to Selectively Create an Item

Field of the Invention

The present invention generally relates to a member and to a method for using
5 the member to selectively create an item and more particularly, to a member which
allows an item to be efficiently and quickly assembled and/or created.

Background of the Invention

Items, such as utility vehicles or golf carts, are created or assembled by the
use of several members which are selectively and weldably interconnected, thereby
10 cooperatively forming the structure or the frame of the item. Particularly, a first pair
of these members are typically interconnected and the frame structure is subsequently
“grown” or created by sequentially interconnecting members to the partially
completed and the then existing frame structure until the frame is completed. The
completed frame is then used to operatively support various devices and/or
15 assemblies, thereby allowing the item to be created and effective to cause the created
item to perform some desired function.

While this approach does allow an item to be created, it suffers from some
drawbacks. That is, this approach requires a relatively large amount of time and
effort in order to properly and initially align (and maintain the proper alignment of
20 the members) as the members are respectively interconnected. Further, by way of
example and without limitation, this approach does not typically allow the members
to be practically and/or easily “preassembled” in order to allow one to determine
whether the various and respective geometric configurations of the members allow a
desired frame structure to be completed and/or to allow one to evaluate different

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frame structure alternatives before the frame is actually constructed and/or assembled.

There is therefore a need for a member and a method for using the member to create an item in a manner which overcomes the various and previously delineated drawbacks of prior members and/or methods.

Summary of the Invention

It is a first object of the present invention to provide a member and a method for using the member in a manner which overcomes at least some of the previously delineated drawbacks of prior frame forming members and methods.

10 It is a second object of the present invention to provide a member and a method for using the member in a manner which overcomes at least some of the previously delineated drawbacks of prior members and methods and which, by way of example and without limitation, allows an item to be efficiently constructed.

15 It is a third object of the present invention to provide a member and a method for using the member in a manner which allows a frame to be efficiently produced and/or created and which further allows a frame assembly to be efficiently and removably constructed.

20 It is a fourth object of the present invention to provide a member and a method for using the member to create a utility type vehicle in a manner which overcomes at least some of the previously delineated drawbacks associated with prior members and methods.

According to a first aspect of the present invention a member is provided. The member includes substantially identical first and second portions which cooperatively form a pair of substantially identical channels, each of the first and

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second portion having a substantially identical ridge portion which respectively interrupts the first and second channels.

According to a second aspect of the present invention a member is provided. The member includes at least a pair of tubular portions which integrally terminate
5 within and which emanate from a neck portion and which cooperate with the neck portion to form a pair of discontinuous grooves.

According to a third aspect of the present invention a method for creating an item is provided. The method comprises the steps of forming a plurality of joints which have discontinuous grooves; forming a plurality of tubular members; placing
10 the tubular members into the joint members; and closing the channels, thereby forming the item.

These and other features, aspects, and advantages of the present invention will become apparent from a reading of the following detailed description of the preferred embodiment of the invention and by reference to the following drawings.

15 **Brief Description of the Drawings**

Figure 1 is a perspective view of a frame assembly which is made in accordance with the methodology of the preferred embodiment of the invention;

Figure 2 is a perspective view of an item which is made in accordance with the teachings of the preferred embodiment of the invention;

20 Figure 3 is a perspective view of a member which is made in accordance with the teachings of the preferred embodiment of the invention and which is shown as selectively receiving three tubular members;

Figure 4 is a cross-sectional view of the item which is shown in Figure 2 and which is taken generally along view line 4-4;

Figure 5 is a perspective view of a member which is made in accordance with the teachings of a second embodiment of the invention;

Figure 6 is a cross-sectional view of the item which is shown in Figure 2 and which is taken generally along view line 6-6;

Figure 7 is a cross-sectional view of the member which is shown in Figure 5 and which is taken generally along view line 7-7; and

Figure 8 is a cross-sectional view of the member which is shown in Figure 3 and which is taken generally along view line 8-8.

Detailed Description of the Preferred Embodiment of the Invention

Referring now to Figure 3, there is shown a member 10 which is made in accordance with the teachings of the preferred embodiment of the invention. Particularly, member 10 is substantially symmetrical about plane 12 and forms and/or comprises a pair of substantially identical portions 14, 16 on each side of the plane of symmetry 12. In one non-limiting embodiment of the invention, member 10 may be formed from a single die-cast operation and portions 14, 16 may be an integral part of the selectively formed member 10.

Particularly, portions 14, 16 cooperatively form substantially identical grooves, passages, and/or channels 18, 20 which are interrupted or caused to be discontinuous by a substantially identical ridge portion 22. In one non-limiting embodiment of the invention, each of the channels 18, 20 is substantially rectangular, although other shapes may be utilized, and each of the channels 18, 20 is linearly coextensive. Hence, as shown, portions 14, 16 cooperate to form a member 10 having at least two protruding and generally hollow and generally cylindrical tubular portions 24, 26 which integrally terminate within a neck or generally hollow throat

portion 28. A third protruding and generally hollow and generally cylindrical member 30 also integrally terminates within the throat portion 28. In one non-limiting embodiment of the invention, each portion 24, 26, and 30 is substantially similar. Thus, channel 18 traverses a portion of portions 24 and 30 while channel 20 traverses a portion of portions 26 and 30. Each channel 18, 20, in one non-limiting embodiment, forms a substantially right angle. Each pair of portions 26, 20 and 24, 30 each form respective right angles, although other angles may be selectively utilized.

In one non-limiting embodiment of the invention, ridge portions 22 are disposed within respective channels 18, 20 at the position or portion in which each respective channel 18, 20 forms a respective right angle. As shown best in Figures 7 and 8, ridge portions 22 may either be depressed (i.e., extending through a channel 18, 20 and into the throat portion 28 or as best shown in Figures 3 and 8, or raised (i.e., outwardly extending from channel 18, 20 and away from the throat portion 28, as best shown in Figures 5 and 7). The use of these ridge portions 22 to substantially allow relatively tight joints to be created is further discussed below.

According to the methodology of the preferred embodiment of the invention, substantially identical tubular and/or generally cylindrical members 40, 42, and 44 may be selectively and removably and frictionally placed within respective portions 24, 26, and 30, thereby forming a joint assembly. It should be realized that in various non-limiting embodiments of the invention, members 40, 42, 44 may be selectively and respectively bent or shaped in a desired manner and that the use of a plurality of joint members 10 and members 40, 42, and 44 allows a frame, such as frame 50 of

Figure 1, to be selectively constructed and to have a desired shape (i.e., each member 40, 42, 44 may be coupled to and/or used to form a pair of joint assemblies).

In this manner, an entire frame 50 may be removably constructed in order to evaluate the overall frame assembly, to allow a substantially accurate assessment to be of the potential for creating a desired frame shape or configuration by the members 10 and 24, 26, and 30, and to allow various frames 50 having varied geometric configurations to be removably constructed, thereby allowing various changes and modifications to be made to the various members 10, 40, 42, 44 in order to allow various types of desired frames to be created. It should also be realized that the size and shape of each or all of the portions 40, 42, 44 may be altered and/or modified from that which is shown in the various Figures 1-8, in order to allow different types of members 40, 42, 44 to be used in the creation of a frame assembly 50. Hence, a plurality of joint members 10 are selectively interconnected by the use of members 40, 42, 44 to form frame 50.

After the frame 50 has been constructed, the created channels 18,20 of each member 10 are selectively closed by the use of adhesive material which may be selectively deposited within the channels 18, 20 and/or by welding or otherwise joining the respective edges 60, 62 of each channel 18, 20, thereby securing the received members 40,42, and 44 within respective portions 24, 26, and 30 of each of the joint assemblies 10.

The depressed version or type of ridge 22, as best shown in Figure 8, allows the deposited material to adherably reside within the "dimple" or depression portion 23, thereby allowing a substantially continuous bead of material to be deposited in each of the channels 18, 20 and/or allowing a continuous weld to be made if the

opposed channel edges 60, 62. The raised portion 25 of type ridge 22, as best shown in Figure 7, increases the strength of the formed connection over that of the ridge configuration shown in Figure 3, by allowing a greater amount of material to reside within the channels 18, 20 (i.e., an amount of material substantially equal to the thickness or the height of the raised ridge 22), thereby providing a more secure joint. The linear coextensiveness of each of the channels 18, 20 substantially ensures that the formed joint is of substantially equal tightness on opposed sides of each of the members 40, 42, 44.

After the frame 50 has been created, panels 70 may be selectively adhered to the various members 10, 40, 42, 44 by the use of an adhesive 72, thereby forming item 74 which is shown, by way of example and without limitation, in Figure 2. Each of the panels 70 may be dissimilar and even may include a substantially transparent panel 76

A second member embodiment is shown in Figure 5. Particularly, member 80 is substantially similar to member 10 except that portion 30 includes a pair of substantially similar serrated or notched portions 102, 104 which allows the member 80 (i.e. portion 30 of member 80) to be welded to the received member 44, further securing the received member within the portion 24 and within the member 80.

It should be understood that the invention is not to be limited to the exact construction and method which has been previously delineated above, but that various changes and modifications may be made without departing from the spirit and the scope of the invention as is more fully found in the claims.

What is Claimed is:

- 5 (1) A member having substantially identical first and second portions, each of the first and second substantially identical portions including a channel which is interrupted by a ridge portion.
- (2) The member of Claim 1 wherein each of the channels forms a substantial right angle.
- (3) The member of Claim 2 wherein each of the channels is substantially rectangular.
- 10 (4) The member of Claim 3 wherein said member is substantially hollow.
- (5) A member having at least a pair of tubular portions which protrude from and which integrally terminate within a neck portion, said member further having a pair of channels which respectively traverse a unique one of the tubular portions and the neck portion.
- 15 (6) The member of Claim 5 wherein each of the channels is discontinuous.
- (7) The member of Claim 6 wherein said member further includes a first and a second substantially identical ridge portion which respectively extend into a first and a second of said pair of channels.
- (8) The member of Claim 7 wherein said channels are each substantially
20 rectangular.
- (9) The member of Claim 8 further comprising a third tubular portion which protrudes from the neck portion.
- (10) The member of Claim 9 wherein said third tubular portion form a right angle with the at least a pair of said tubular portions.

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- (11) The member of Claim 10 wherein the first ridge portion perpendicularly extends into said first channel.
- (12) The member of Claim 11 wherein the second ridge portion perpendicularly extends into the second channel.
- 5 (13) A method comprising the steps of forming a plurality of joints, each of the joints having at least two discontinuous grooves; obtaining a plurality of tubular members; placing said plurality of tubular members into the plurality of joints; and closing said at least two discontinuous grooves of each of said plurality of joints, thereby forming a frame assembly.
- 10 (14) The method of Claim 13 further comprising the step of placing panels on said frame assembly.
- (15) The method of Claim 14 wherein said step of placing panels onto said frame assembly comprises the step of gluing said panels onto said frame assembly.
- (16) The method of Claim 15 wherein each of the plurality of joints are hollow.
- 15 (17) The method of Claim 16 wherein each of said grooves is substantially identical.
- (18) The method of Claim 17 wherein each of said grooves is substantially rectangular.
- (19) The method of Claim 18 wherein said discontinuity of each of said grooves is
20 created by the use of a plurality of ridge portions, each of said ridge portions residing within a unique one of said grooves.
- (20) The method of Claim 19 further comprising the step of causing each of said ridge portions to outwardly extend from a unique one of said grooves.

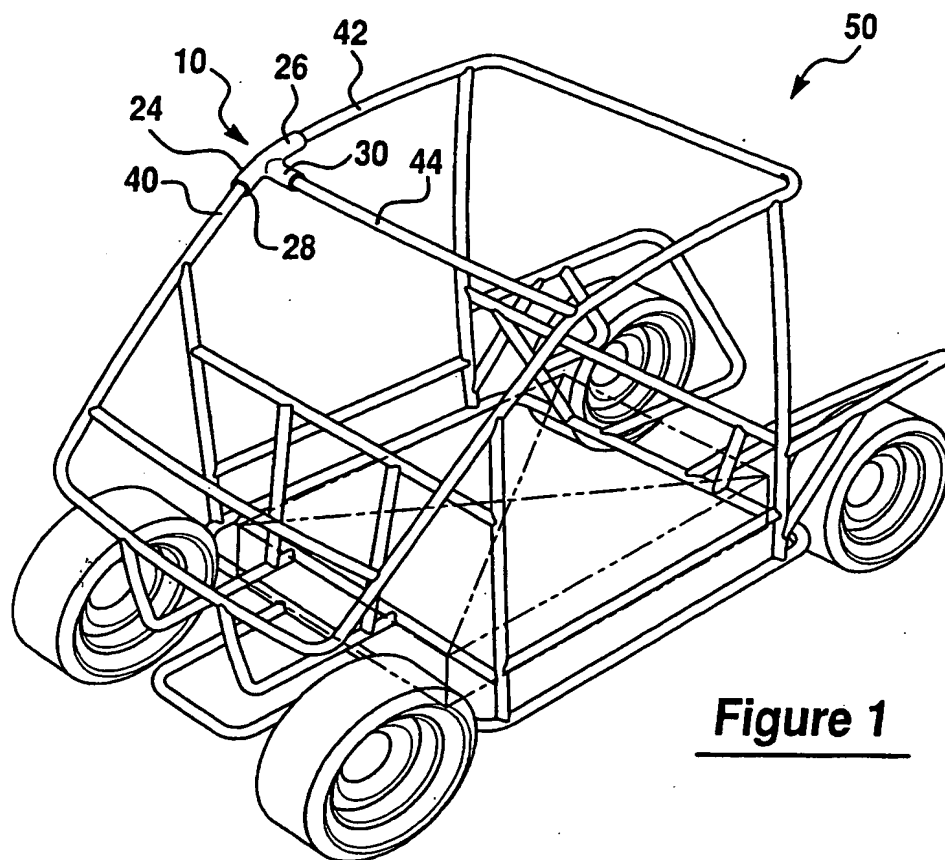


Figure 1

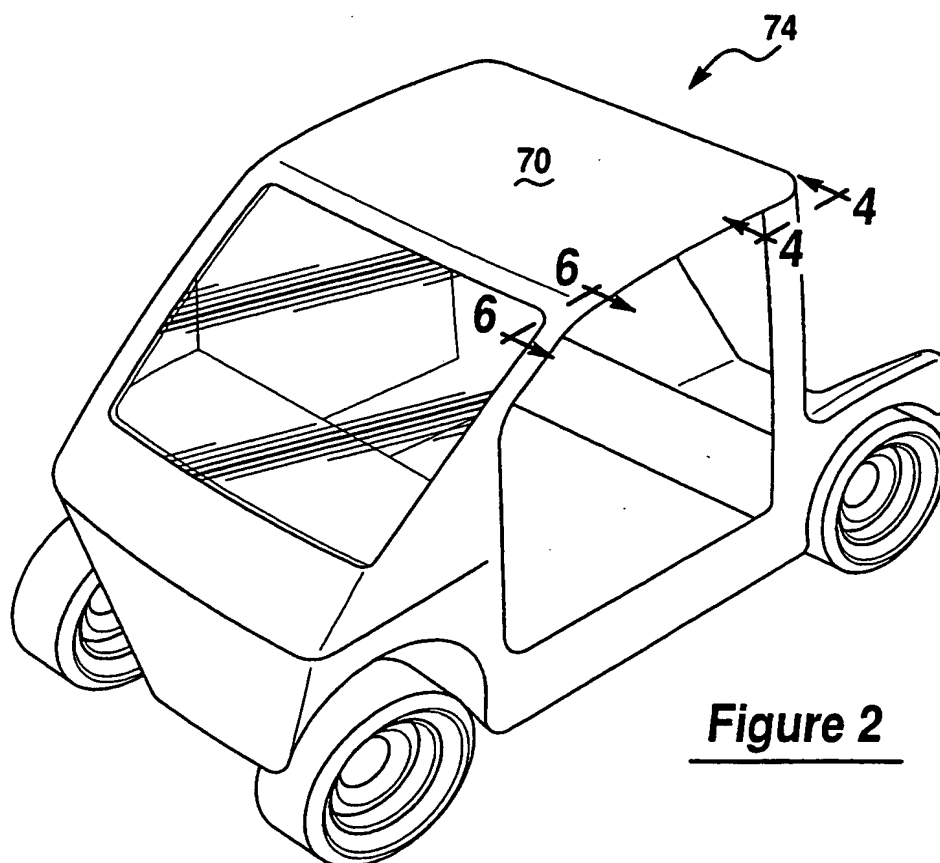
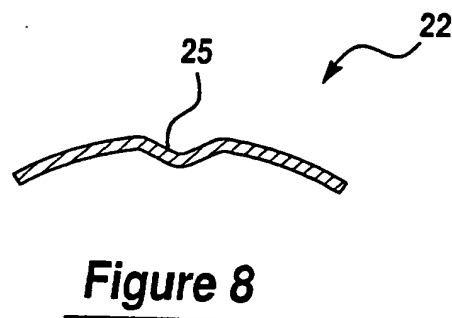
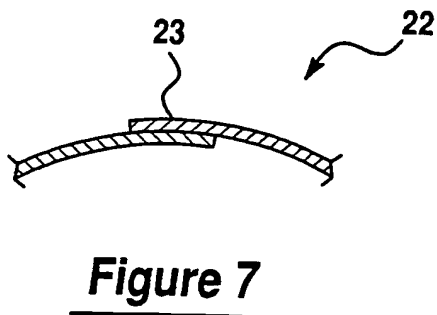
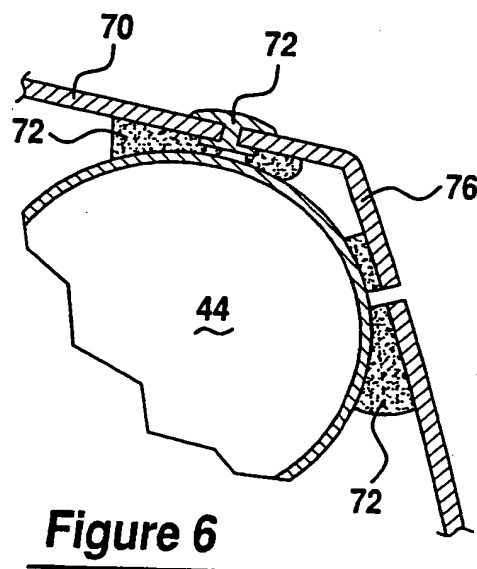
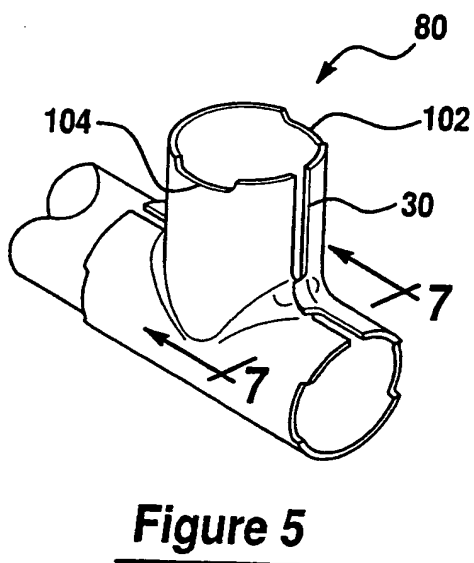
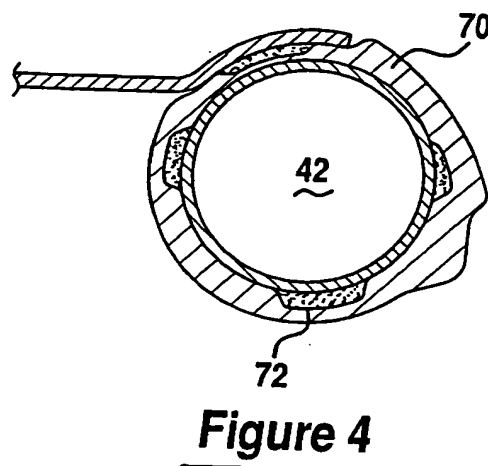
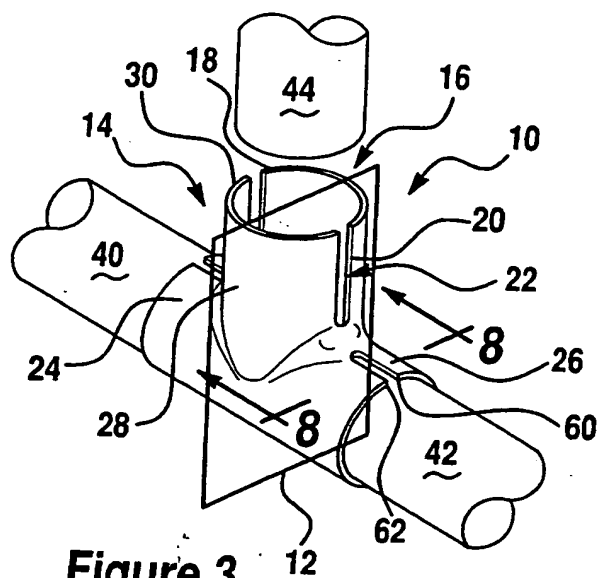


Figure 2



(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 November 2001 (01.11.2001)

PCT

(10) International Publication Number
WO 01/81155 A3

(51) International Patent Classification⁷: **B62D 23/00.**
27/02

(21) International Application Number: PCT/US01/12875

(22) International Filing Date: 20 April 2001 (20.04.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/557,061 21 April 2000 (21.04.2000) US

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(81) Designated States (national): AL, AM, AT, AU, AZ, BA,
BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES.

FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG,
MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE,
SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN,
YU, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF,
CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

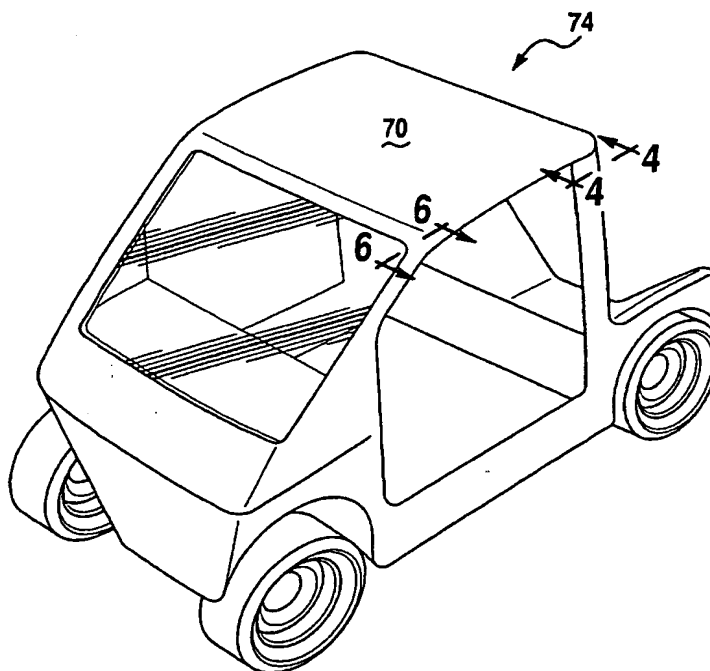
Published:

— with international search report

(88) Date of publication of the international search report:
21 February 2002

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: COUPLING MEMBER FOR INTERCONNECTING PROFILES TO CREATE A FRAME ASSEMBLY



(57) Abstract: A member 10 which may be used to create a frame assembly 50. The member includes substantially identical portions 12, 14 which include substantially identical and substantially linearly coextensive channels 18, 20, effective to allow the member 10 to securely receive a plurality of members 24, 26, and 30 and to cooperate with these and other members 24, 26, 30, and 10 to form frame assembly 50.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/12875

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B62D23/00 B62D27/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B62D E04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	EP 0 873 933 A (PORSCHE AG) 28 October 1998 (1998-10-28) figures 1-3 column 1, line 58 -column 2, line 35	1,2,4-6, 9,10,13, 16
A	DE 195 38 803 A (FIAT AUTO SPA) 25 April 1996 (1996-04-25) figure 1 column 2, line 41 -column 3, line 30 -/-	3,8

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- *A* document defining the general state of the art which is not considered to be of particular relevance
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Date of the actual completion of the international search

12 November 2001

Date of mailing of the international search report

19/11/2001

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Deraymaeker, D

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/12875

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

International Application No

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